



SEQUENCE LISTING

<110> Choe, Sunghwa  
Feldmann, Kenneth A

<120> Dwf7 MUTANTS

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<140> 09/775,879

<141> 2001-02-02

<150> 60/179,901

<151> 2000-02-02

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<170> PatentIn Ver. 2.0

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25

<210> 2

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26

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<223> Description of Artificial Sequence: Primer S5D\_1F

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19

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 caccatcat atctacaaca a 21  
  
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aagtatagta gggttccggc gaggta 26

<210> 11  
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<210> 12  
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<210> 13  
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<212> DNA  
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28

<210> 15  
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 <212> PRT  
 <213> delta-7 sterol C-5 desaturase (Candida glabrata)

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 Tyr Ala Lys Ile Ala Pro Val Glu Leu Gln Arg Gly Ile Asp Asp Ser  
                   20                  25                  30  
 Leu Val Asn Ala Leu Ser Leu Asn Lys Ile Val Ser Asn Ser Thr Leu  
           35                  40                  45  
 Leu His Glu Thr Leu Ser Ile Thr Asn Ser Leu Lys Arg Val Asn Lys  
           50                  55                  60  
 Asp Val Tyr Gly Leu Thr Pro Phe Leu Phe Asp Phe Thr Glu Lys Thr  
           65                  70                  75                  80  
 Tyr Ala Ser Leu Leu Pro Arg Asn Asn Leu Ile Arg Glu Phe Phe Ser  
                   85                  90                  95  
 Leu Trp Ala Val Val Thr Val Phe Gly Leu Leu Leu Tyr Leu Ile Thr  
           100                  105                  110  
 Ala Ser Leu Ser Tyr Val Phe Val Phe Asp Arg Thr Ile Phe Asn His  
           115                  120                  125  
 Pro Lys Tyr Leu Lys Asn Gln Met Tyr Leu Glu Ile Lys Leu Ala Val  
           130                  135                  140  
 Ser Ala Ile Pro Thr Met Ser Leu Leu Thr Val Pro Trp Phe Met Leu  
           145                  150                  155                  160  
 Glu Leu Asn Gly Tyr Ser Lys Leu Tyr Tyr Asp Val Asp Trp Glu His  
                   165                  170                  175  
 His Gly Leu Arg Lys Leu Leu Ile Glu Tyr Ala Thr Phe Ile Phe Phe  
           180                  185                  190  
 Thr Asp Cys Gly Ile Tyr Leu Ala His Arg Trp Leu His Trp Pro Arg

10972062650

195					200					205					
Val	Tyr	Lys	Ala	Leu	His	Lys	Pro	His	His	Lys	Trp	Leu	Val	Cys	Thr
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Pro	Phe	Ala	Ser	His	Ala	Phe	His	Pro	Val	Asp	Gly	Tyr	Phe	Gln	Ser
225						230					235				240
Leu	Ser	Tyr	His	Ile	Tyr	Pro	Met	Ile	Leu	Pro	Leu	His	Lys	Ile	Ser
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Tyr	Leu	Ile	Leu	Phe	Thr	Phe	Val	Asn	Phe	Trp	Ser	Val	Met	Ile	His
			260					265					270		
Asp	Gly	Gln	His	Met	Ser	Asn	Asn	Pro	Val	Val	Asn	Gly	Thr	Ala	Cys
		275					280					285			
His	Thr	Val	His	His	Leu	Tyr	Phe	Asn	Tyr	Asn	Tyr	Gly	Gln	Phe	Thr
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Thr	Leu	Trp	Asp	Arg	Leu	Gly	Gly	Ser	Tyr	Arg	Arg	Pro	Glu	Asp	Ser
305					310					315					320
Leu	Phe	Asp	Pro	Lys	Leu	Lys	Met	Asp	Lys	Lys	Val	Leu	Glu	Lys	Gln
				325					330					335	
Ala	Arg	Glu	Thr	Ala	Ala	Tyr	Ile	Gln	Glu	Val	Glu	Gly	Asp	Asp	Thr
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Asp	Arg	Val	Tyr	Asn	Thr	Asp	Lys	Lys	Lys	Thr	Asn				
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<211> 365															
<212> PRT															
<213> delta-7 sterol C-5 desaturase (Saccharomyces cerevisiae)															
<400> 16															
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Tyr	Ala	Lys	Val	Leu	Pro	Ala	Ser	Leu	Ala	Ala	Asn	Ile	Pro	Val	Lys
			20					25					30		
Trp	Gln	Lys	Leu	Leu	Gly	Leu	Asn	Ser	Gly	Phe	Ser	Asn	Ser	Thr	Ile
		35					40					45			
Leu	Gln	Glu	Thr	Leu	Asn	Ser	Lys	Asn	Ala	Val	Lys	Glu	Cys	Arg	Arg
		50					55				60				
Phe	Tyr	Gly	Gln	Val	Pro	Phe	Leu	Phe	Asp	Met	Ser	Thr	Thr	Ser	Phe
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 <212> PRT  
 <213> delta-7 sterol C-5 desaturase (Schizosaccharomyces pombe)

<400> 17  
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 Tyr Gly Lys Ile Ala Glu Ser Phe Asp Ser Ser Ser Ser Phe Ala Asn  
                   20                  25                  30  
 Thr Ala Val Asn Ser Thr Thr Leu Gly Leu Ala Glu Lys Val Asn Phe  
                   35                  40                  45  
 Ala Ile Thr Ser Gly Leu Leu Asp Arg Asn Asn Val Trp Arg Gln Phe  
                   50                  55                  60  
 Thr Ser Leu Phe Leu Ile Thr Trp Ile Met Gly Thr Leu Ser Tyr Phe  
           65                  70                  75                  80  
 Leu Ser Ala Ser Phe Ala Tyr Tyr Val Tyr Phe Asp Arg Glu Glu Ala  
                   85                  90                  95  
 Arg Arg His Pro Lys Phe Leu Lys Asn Gln Glu His Leu Glu Leu Met  
                   100                  105                  110  
 Val Ala Leu Lys Asn Leu Pro Gly Met Ala Ile Leu Thr Ala Pro Trp  
                   115                  120                  125  
 Phe Leu Ala Glu Ile Arg Gly Tyr Gly Tyr Val Tyr Asp Lys Leu Asp  
           130                  135                  140  
 Glu Tyr Gly Tyr Phe Tyr Leu Phe Phe Ser Ile Ala Leu Phe Leu Leu  
           145                  150                  155                  160  
 Phe Ser Asp Phe Leu Ile Tyr Trp Ile His Arg Ala Leu His His Arg  
                   165                  170                  175  
 Trp Leu Tyr Ala Pro Leu His Lys Leu His His Lys Trp Ile Val Pro  
                   180                  185                  190  
 Thr Pro Tyr Ser Ser His Ala Phe His Tyr Leu Asp Gly Tyr Ser Gln  
                   195                  200                  205  
 Ser Leu Pro Tyr His Met Phe Pro Phe Phe Phe Pro Leu Asn Lys Tyr  
           210                  215                  220  
 Val Tyr Leu Leu Leu Phe Gly Ser Val Asn Tyr Trp Thr Val Leu Ile  
           225                  230                  235                  240  
 His Asp Gly Lys Tyr Phe Ser Asn Asn Ala Val Val Asn Gly Ala Ala  
                   245                  250                  255

His His Ala Ala His His Met Tyr Phe Asn Tyr Asn Tyr Gly Gln Phe  
260 265 270

Phe Thr Leu Phe Asp Arg Leu Cys Ser Ser Tyr Arg Gln Pro Asp Gln  
275 280 285

Glu Leu Phe Asp Ala Glu Leu Arg Asn Glu Lys Leu Gln Glu Gln Arg  
290 295 300

Ile Arg Phe Met Glu Thr Val Gln Tyr Thr Val Glu Gly Lys Asp Asp  
305 310 315 320

Arg Thr Tyr Ala Ser Lys Lys Asp Asn  
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<210> 18

<211> 281

<212> PRT

<213> DWF7/STE1 (Arabidopsis)

<400> 18

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Glu Pro Leu Pro His Phe Leu Gln Thr Trp Leu Arg Asn Tyr Leu Ala  
35 40 45

Gly Thr Leu Leu Tyr Phe Ile Ser Gly Phe Leu Trp Cys Phe Tyr Ile  
50 55 60

Tyr Tyr Leu Lys Ile Asn Val Tyr Leu Pro Lys Asp Ala Ile Pro Thr  
65 70 75 80

Ile Lys Ala Met Arg Leu Gln Met Phe Val Ala Met Lys Ala Met Pro  
85 90 95

Trp Tyr Thr Leu Leu Pro Thr Val Ser Glu Ser Met Ile Glu Arg Gly  
100 105 110

Trp Thr Lys Cys Phe Ala Ser Ile Asp Glu Phe Gly Trp Ile Leu Tyr  
115 120 125

Phe Val Tyr Ile Ala Ile Tyr Leu Val Phe Val Glu Phe Gly Ile Tyr  
130 135 140

Trp Met His Arg Glu Leu His Asp Ile Lys Pro Leu Tyr Lys Tyr Leu  
145 150 155 160

His Ala Thr His His Ile Tyr Asn Lys Gln Asn Thr Leu Ser Pro Phe  
165 170 175



Ala Gly Leu Ala Phe His Pro Val Asp Gly Ile Leu Gln Ala Val Pro  
180 185 190

His Val Ile Ala Leu Phe Ile Val Pro Ile His Phe Thr Thr His Ile  
195 200 205

Gly Leu Leu Phe Met Glu Ala Ile Trp Thr Ala Asn Ile His Asp Cys  
210 215 220

Ile His Gly Asn Ile Trp Pro Val Met Gly Ala Gly Tyr His Thr Ile  
225 230 235 240

His His Thr Thr Tyr Lys His Asn Tyr Gly His Tyr Thr Ile Trp Met  
245 250 255

Asp Trp Met Phe Gly Ser Leu Arg Asp Pro Leu Leu Glu Glu Asp Asp  
260 265 270

Asn Lys Asp Ser Phe Lys Lys Ala Glu  
275 280

<210> 19

<211> 291

<212> PRT

<213> delta-7 sterol C-5 desaturase concensus

<400> 19

Met Asp Leu Val Leu Glu Ala Asp His Tyr Val Phe Asp Asp Tyr Ala  
1 5 10 15

Lys Ile Pro Leu Ala Ile Asp Ser Leu Leu Asn Val Ser Asn Ser Thr  
20 25 30

Leu Glu Thr Leu Asn Lys Val Asn Tyr Gly Pro Phe Leu Phe Asp Phe  
35 40 45

Thr Glu Thr Ser Phe Ser Leu Leu Pro Arg Asn Asn Leu Trp Arg Glu  
50 55 60

Phe Leu Ser Leu Trp Leu Ile Val Thr Ile Phe Gly Leu Leu Tyr Ile  
65 70 75 80

Ala Ser Leu Ser Tyr Phe Phe Asp Ile Phe Asn His Pro Lys Tyr Leu  
85 90 95

Lys Asn Gln Met Leu Glu Ile Lys Ala Val Ala Ile Pro Trp Met Ser  
100 105 110

Leu Leu Thr Val Pro Trp Phe Met Glu Leu Gly Tyr Ser Lys Leu Tyr  
115 120 125

Lys Ile Asp Glu His Gly Arg Lys Leu Phe Ile Glu Ala Thr Phe Phe  
130 135 140

Phe Thr Asp Gly Ile Tyr Ala His Arg Trp Leu His Trp Pro Tyr Lys  
 145 150 155 160  
 Ala Leu His Lys Pro His His Lys Trp Leu Val Cys Thr Pro Phe Ala  
 165 170 175  
 Ser His Ala Phe His Pro Val Asp Gly Tyr Leu Gln Ser Leu Tyr His  
 180 185 190  
 Ile Tyr Pro Leu Leu Pro Leu His Lys Ser Tyr Leu Leu Phe Thr Phe  
 195 200 205  
 Val Asn Phe Trp Thr Val Met Ile His Asp Gly Gln Ser Asn Asn Pro  
 210 215 220  
 Val Val Asn Gly Ala Cys His Thr Val His His Leu Tyr Phe Asn Tyr  
 225 230 235 240  
 Asn Tyr Gly Gln Phe Thr Thr Leu Trp Asp Arg Leu Gly Gly Ser Tyr  
 245 250 255  
 Arg Arg Pro Asp Ser Leu Phe Asp Pro Lys Leu Arg Asp Lys Lys Glu  
 260 265 270  
 Gln Arg Glu Thr Tyr Ile Glu Val Glu Gly Asp Asp Asp Arg Tyr Asp  
 275 280 285  
 Lys Lys Asn  
 290

<210> 20  
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 <212> DNA  
 <213> Genomic dwf7 (Arabidopsis)

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 tctcggtgga tctccgattc acatggcggc ggataatgct tatctgatgc agtttggtga 180  
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 cttcatctcc ggtttcctct ggtgcttcta catctattac cttaaaatca acgtttacct 360  
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<210> 21  
 <211> 281  
 <212> PRT  
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<400> 21  
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 Glu Pro Leu Pro His Phe Leu Gln Thr Trp Leu Arg Asn Tyr Leu Ala  
 35 40 45  
 Gly Thr Leu Leu Tyr Phe Ile Ser Gly Phe Leu Trp Cys Phe Tyr Ile  
 50 55 60  
 Tyr Tyr Leu Lys Ile Asn Val Tyr Leu Pro Lys Asp Ala Ile Pro Thr  
 65 70 75 80  
 Ile Lys Ala Met Arg Leu Gln Met Phe Val Ala Met Lys Ala Met Pro  
 85 90 95  
 Trp Tyr Thr Leu Leu Pro Thr Val Ser Glu Ser Met Ile Glu Arg Gly  
 100 105 110  
 Trp Thr Lys Cys Phe Ala Ser Ile Asp Glu Phe Gly Trp Ile Leu Tyr  
 115 120 125  
 Phe Val Tyr Ile Ala Ile Tyr Leu Val Phe Val Glu Phe Gly Ile Tyr  
 130 135 140  
 Trp Met His Arg Glu Leu His Asp Ile Lys Pro Leu Tyr Lys Tyr Leu  
 145 150 155 160  
 His Ala Thr His His Ile Tyr Asn Lys Gln Asn Thr Leu Ser Pro Phe  
 165 170 175

Ala Gly Leu Ala Phe His Pro Val Asp Gly Ile Leu Gln Ala Val Pro  
 180 185 190

His Val Ile Ala Leu Phe Ile Val Pro Ile His Phe Thr Thr His Ile  
 195 200 205

Gly Leu Leu Phe Met Glu Ala Ile Trp Thr Ala Asn Ile His Asp Cys  
 210 215 220

Ile His Gly Asn Ile Trp Pro Val Met Gly Ala Gly Tyr His Thr Ile  
 225 230 235 240

His His Thr Thr Tyr Lys His Asn Tyr Gly His Tyr Thr Ile Trp Met  
 245 250 255

Asp Trp Met Phe Gly Ser Leu Arg Asp Pro Leu Leu Glu Glu Asp Asp  
 260 265 270

Asn Lys Asp Ser Phe Lys Lys Ala Glu  
 275 280

<210> 22  
 <211> 2925  
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 <213> Genomic HDF7

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 aagactccat ttttgtttaa ggtaaaccct gaatctcata gattgtcgat tgttggtatt 1020  
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Ser	Phe	Tyr	Asn	Arg	Met	Val	Leu	Ser	His	Leu	Leu	Pro	Val	Asn	Leu
			20					25					30		
Trp	Glu	Pro	Leu	Pro	His	Phe	Leu	Gln	Thr	Trp	Leu	Arg	Asn	Tyr	Leu
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Ala	Gly	Asn	Ile	Leu	Tyr	Phe	Ile	Ser	Gly	Phe	Leu	Trp	Cys	Phe	Tyr
	50					55					60				
Ile	Tyr	Tyr	Leu	Lys	Leu	Asn	Val	Tyr	Val	Pro	Lys	Glu	Ser	Ile	Pro
65				70					75					80	
Thr	Arg	Lys	Ala	Met	Leu	Leu	Gln	Ile	Tyr	Val	Ala	Met	Lys	Ala	Met
			85					90					95		
Pro	Trp	Tyr	Thr	Leu	Leu	Pro	Ala	Val	Ser	Glu	Tyr	Met	Ile	Glu	His
	100						105						110		
Gly	Trp	Thr	Lys	Cys	Tyr	Ser	Thr	Leu	Asp	His	Phe	Asn	Trp	Phe	Leu
	115						120					125			

Cys Phe Leu Tyr Ile Ala Leu Tyr Leu Val Leu Val Glu Phe Met Ile  
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Tyr Trp Val His Lys Glu Leu His Asp Ile Lys Phe Leu Tyr Lys His  
145 150 155 160

Leu His Ala Thr His His Met Tyr Asn Lys Gln Asn Thr Leu Ser Pro  
165 170 175

Phe Ala Gly Leu Ala Phe His Pro Leu Asp Gly Ile Leu Gln Ala Ile  
180 185 190

Pro His Val Ile Ala Leu Phe Ile Val Pro Ile His Leu Ile Thr His  
195 200 205

Leu Ser Leu Leu Phe Leu Glu Gly Ile Trp Thr Ala Ser Ile His Asp  
210 215 220

Cys Ile His Gly Asn Ile Trp Pro Ile Met Gly Ala Gly Tyr His Thr  
225 230 235 240

Ile His His Thr Thr Tyr Lys His Asn Tyr Gly His Tyr Thr Ile Trp  
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Met Asp Trp Met Phe Gly Ser Leu Met Val Pro Leu Ala Glu Lys Asp  
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Ser Phe Lys Glu Lys Glu Lys  
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Glu Pro Leu Pro His Phe Leu Gln Thr Trp Leu Arg Asn Tyr Leu Ala  
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Gly Thr Leu Leu Tyr Phe Ile Ser Gly Phe Leu Trp  
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Phe Tyr Asn Arg Ile Val Leu Ser His Leu Leu Pro Ala Asn Leu Trp  
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Glu Pro Leu Pro His Phe Leu Gln Thr Trp Leu Arg Asn Tyr Leu Ala  
35 40 45

Gly Thr Leu Leu Tyr Phe Ile Ser Gly Phe Leu Trp Cys Phe Tyr Ile  
50 55 60

Tyr Tyr Leu Lys Ile Asn Val Tyr Leu Pro Lys Asp Ala Ile Pro Thr  
65 70 75 80

Ile Lys Ala Met Arg Leu Gln Met Phe Val Ala Met Lys Ala Met Pro  
85 90 95

Trp Tyr Thr Leu Leu Pro Thr Val Ser Glu Ser Met Ile Glu Arg Gly  
100 105 110

Trp Thr Lys Cys Phe Ala Ser Ile Asp Glu Phe Gly Trp Ile Leu Tyr  
115 120 125

Phe Val Tyr Ile Ala Ile Tyr Leu Val Phe Val Glu Phe Gly Ile Tyr  
130 135 140

Trp Met His Arg Glu Leu His Asp Ile Lys Pro Leu Tyr Lys Tyr Leu  
145 150 155 160

His Ala Thr His His Ile Tyr Asn Lys Gln Asn Thr Leu Ser Pro Phe  
165 170 175

Ala Gly Leu Ala Phe His Pro Val Asp Gly Ile Leu Gln Ala Val Pro  
180 185 190

His Val Ile Ala Leu Phe Ile Val Pro Ile His Phe Thr Thr His Ile  
195 200 205

Gly Leu Leu Phe Met Glu Ala Ile Trp Thr Ala Asn Ile His Asp Cys  
210 215 220

Ile His Gly Asn Ile Trp  
225 230